

Mix Design to produce 1 m³ of EPS-Concrete: SIRCONTEC PsB

Type: EPS-Concrete	SIRC	PsB V20	PsB V25	PsB V30	PsB V35	PsB V40	PsB V50	PsB 40	PsB 50	PsB 60
Dry density (oven dry)	[kg/m ³]	200	250	300	350	400	500	400	450	500
	[lb/ft ³]	12	16	19	22	25	31	25	28	31
Cement Portland CEM I – 32,5R	[kg]	180	220	250	280	300	380	0	0	0
Cement Portland CEM II – 32,5R	[kg]	0	0	0	0	0	0	300	350	390
Sand 0/2-0/4	[kg]	0	0	0	0	0	0	0	0	0
Recycled EPS, crushed *	[lit]	0	0	0	0	0	0	1057	1017	981
EPS V - Virgin pearls / beads *	[lit]	1093	1047	1019	991	954	876	0	0	0
Water in slurry	[kg]	90	110	120	130	150	180	150	160	170
Air quantity	[lit]	72	65	71	77	70	59	82	81	82
Water in foam	[kg]	0	0	0	0	0	0	0	0	0
Wet density	[kg/m ³]	283	342	382	422	461	571	464	524	573
Expected density after 28 days	[kg/m ³]	250	300	340	380	410	510	410	470	520
Foaming agent	FN1 [kg]	0	0	0	0	0	0	0	0	0
Air Entraining Admixture	FP1 [l]	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7
Water / Binder		0.50	0.50	0.48	0.46	0.50	0.47	0.50	0.46	0.44
Compressive strength Rc	[N/mm ²]	0.78	0.98	1.47	1.86	1.98	2.50	0.50**	0.80**	1.10**
	[MPa]									
	[kg/cm ²]	8.0	10.0	15.0	19.0	20.2	25.5	5.1**	8.2**	11.2**
	[psi]	113	142	213	270	287	363	73**	116**	160**
Thermal conductivity - k/λ (average, oven dry)	[W/m.K]	0.061	0.088	0.097	0.101	0.102	0.107	0.104	0.120	0.140
	[Btu.in/ft ² .°F.hr]	0.423	0.610	0.673	0.700	0.707	0.742	0.721	0.832	0.971

Remarks:

Strengths and other characteristics are achieved with optimum cement and polystyrene granules.

Polystyrene - Concrete may have various densities, characteristics and composition – depending on the purpose and the application structure:

PsB V20-V50 is a lightweight concrete, which is obtained by mixing of round polystyrene granules – “virgin” beads with cement/mortar slurry and Air Entraining Admixture.

The result is an easy-to-process light material with excellent mechanical and thermal insulation properties.

PsB 40-60 is a lightweight concrete, which is obtained by mixing of recycled polystyrene chips with cement/mortar slurry and Air Entraining Admixture.

The result is light material with good thermal insulation properties.

* Volume of EPS packaging, bulk / apparent volume; the required amount depends on the working / useful volume created by the polystyrene chips / beads.

** Minimum compressive strength achieved

Mix Design to produce 1 m³ of EPS-Cellular Concrete: SIRCONTEC PBG-S

Type: EPS-Foam Concrete (EPS-CLC)	SIRC	PBG-S V25	PBG-S V30	PBG-S V35	PBG-S V40	PBG-S 25	PBG-S 30	PBG-S 35	PBG-S 40
Dry density (oven dry)	[kg/m ³]	270	300	350	400	270	300	350	400
	[lb/ft ³]	17	19	22	25	17	19	22	25
Cement Portland CEM I – 32,5R	[kg]	220	250	290	330	0	0	0	0
Cement Portland CEM II – 32,5R	[kg]	0	0	0	0	220	250	290	330
Sand 0/2-0/4	[kg]	0	0	0	0	0	0	0	0
Recycled EPS, crushed *	[lit]	0	0	0	0	500	500	500	500
EPS V - Virgin pearls / beads *	[lit]	500	500	500	500	0	0	0	0
Water in slurry	[kg]	110	120	140	160	110	125	145	165
Foam **	[lit]	461	441	408	375	501	476	443	410
Water in foam	[kg]	27	26	24	22	29	28	26	24
Wet density	[kg/m³]	363	402	460	518	367	410	468	526
Expected density after 28 days	[kg/m³]	300	340	390	440	300	340	390	440
Foaming agent	FN1 [kg]	1.05	1.00	0.93	0.85	1.14	1.08	1.01	0.93
Air Entraining Admixture	FP1 [lit]	0	0	0	0	0	0	0	0
Water / Binder		0.62	0.58	0.56	0.55	0.63	0.61	0.59	0.57
Compressive strength Rc	[N/mm ²] [MPa]	0.88	1.08	1.47	1.86	0.25***	0.30***	0.36***	0.40***
	[kg/cm ²]	9.0	11.0	15.0	19.0	2.5***	3.1***	3.7***	41***
	[psi]	128	157	213	270	36***	44***	52***	58***
Thermal conductivity - k/λ (average, oven dry)	[W/m.K]	0.076	0.080	0.087	0.099	0.083	0.087	0.096	0.106
	[Btu.in/ft ² .°F.hr]	0.527	0.555	0.603	0.686	0.575	0.603	0.666	0.735

Remarks:

Strengths and other characteristics are achieved with optimum cement, polystyrene granules and technical foam.

Polystyrene - Foam Concrete may have various densities, characteristics and composition – depending on the purpose and the application structure:

PBG-S V25-V40 is a lightweight Cellular Concrete, which is obtained by mixing of round polystyrene granules – “virgin” beads – with cement/mortar slurry and foam.

The result is an easy-to-process light material with excellent mechanical and thermal insulation properties.

PBG-S 25-40 is a lightweight Cellular Concrete, which is obtained by mixing of recycled polystyrene chips with cement/mortar slurry and foam.

The result is an easy-to-process light material with good thermal insulation properties.

* Volume of EPS packaging, bulk / apparent volume; ** The required amount of foam depends on the working / useful volume created by the polystyrene chips / beads

*** Minimum compressive strength achieved